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THE MANDIBULAR TUSKS OF AMEBELODON FRICKI

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The ponderous mandible of the great shovel-tusked mastodon, Amebelodon fricki, was figured and described before it was practicable to remove the plaster cinches. In the meantime, this rare specimen has lain on its sand table awaiting the time when sections and casts could be made before mounting it permanently. A rare specimen, especially if heavy, unwieldy, and fragile, is rarely dismantled for study after it is mounted and installed in its case. A gelatine cast of the alveoli has been made, and through the assistance of Mr. Murray Jerome Roper, a cast of the left mandibular tusk has just been finished and is shown in the accompanying cut.

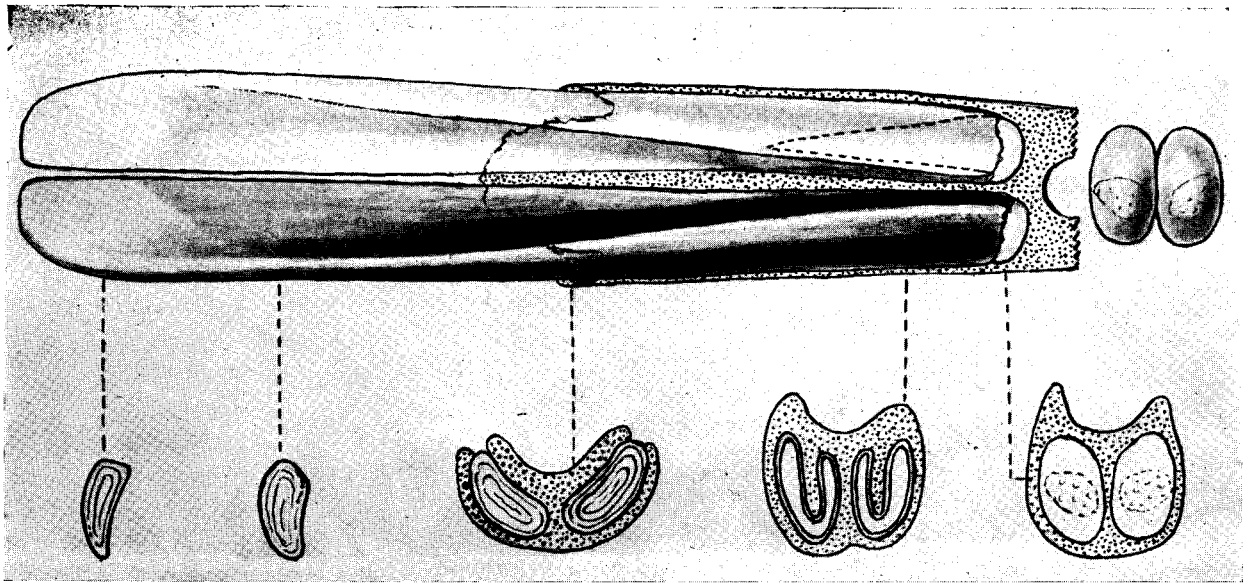
The anterior, or exposed, half of the tusk was cast directly. The posterior half was modeled with reasonable accuracy from portions seen through cracks and breaks in the bone.

The mandibular tusks of this particular amebelodont differ in shape and size from those of all other tetrabelodons. The tusks, which are immoderately developed, are 5½ inches (140 mm.) wide and 45 inches (1144 mm.) long, and at the bases the inner and outer borders are so folded together as to make in either tusk a deep narrow groove, occupied by a thin pendant plate of bone 12 inches long, 3 inches deep, and ½ inch thick. The tusks are solid for 31 inches back of the tips, the total pulp cavity being 14 inches (356 mm.) long. The alveoli in this mandible are nearly as large as one's head, and casts of them resemble, in size and shape, adult human cerebral hemispheres. At this critical spot the walls of bone are reduced to a scant half inch in thickness, which at first sight seems inadequate to the leverage and work the jaw supposedly performed, even after making due allowance for the high tensile strength of bone. In making the first published restoration of this great shovel-tusker, its trunk was shown wound around the mandible to lend it muscular rein-

forcement in digging. It is still assumed that these great tusks were used like a spade or shovel, in digging for food in soft ground, especially in muddy bottoms of rivers, marshes, swamps, and bayous. The great shovel-jaw may have been used to sweep through the water to collect fresh-water algae and other aquatic plants. The amebelodonts seem to have been elephants adapted in some way to digging despite the fact that their jaws seem to be greatly weakened at the point of greatest strain. On the other hand their life habits may have been those of other tetrabelodons, the tusks being simply excessive developments. The great tusk under consideration is dense, of ivory-like whiteness, and is essentially perfect. Subsequent discoveries in Nebraska of two or three different forms of amebelodont tusks varying in shape, size, and curvature must be mentioned here. With the material at hand, it is already apparent that there are two very distinct types of amebelodonts, namely a kind with long, straight tusks and jaws, and another with short, curved tusks and curved jaws. The latter are nature's first dredges, and we are naming them the "dredge-tuskers". The name applies to the dredge-like shape, and seems descriptive even though it may subsequently develop that the shovel-tuskers did not shovel, and that the dredge-tuskers did not dredge. Just as domestic cattle press a calloused upper lip against their lower incisors in shearing off grass, so these tetrabelodons may have pressed their gross trunks against the tusks or the edges of the jaw, in collecting herbage.

There was a notable flattening of the mandibular tusks of Phiomia osborni which is to be counted the precursor of the longirostral mastodons while Moeretherium is the supposed progenitor of the other proboscideans.

On the one hand Phiomia gave rise to a great race of long-jawed mastodonts, which flourished and then declined, including Seridentinus, Dibelodon, the Trilophodonts, the Tetralophodonts, the Amebelodonts and Dredge-tuskers. In their progressive development, their maximum, in point of numbers, variety, and size, seems to have been attained in the days of the Trilophodonts and Tetralophodonts. In the



A B C D E

Fig. 92. A brush drawing of the mandibular tusks of Amebelodon fricki, with the surrounding bone indicated by stippling. Below are five sections at the points indicated by the leaders. At the base of the tusks is a view looking back into the alveoli. Width of each alveolus 5½ inches (140 mm.); height 6½ inches (165 mm.). The dotted lines at the base of the right tusk indicate the size and shape of the pulp cavity. Length of mandibular tusk 45 inches (1144 mm.); width 5½ inches (140 mm.). A—Section at the tip, width 4½ inches (114 mm.); thickness 1¾ inches (44 mm.). B—Section, width 5½ inches (140 mm.); thickness 2 inches (51 mm.). C—Section, width 10½ inches (267 mm.); depth 6 inches (152 mm.). D—Section, width 8 inches (204 mm.); depth 7¼ inches (184 mm.). E—Section, width 7¾ inches (198 mm.); depth 8¾ inches (223 mm.). Length of the pulp cavity 14 inches (356 mm.). Type specimen, No. 4-4-27, collections of Hon. Charles H. Morrill in the Nebraska State Museum, the University of Nebraska, Lincoln.

decline of this mighty race it is thought that the Shovel-tuskers and the Dredge-tuskers were amongst the very last survivors. On the other hand Moeritherium and Palaeomastodon gave rise to a more successful and persistent stock and there followed in order the Mastodon of Europe, that of America, Stegodon, Archidiskodon, Parelephas, the Mammoth, and the modern Indian and African elephants.

The first group perished without survivors, but the second group persists in Elephas and Loxodonta. The two surviving elephants offer meagre data for deductions compared with the data furnished by several hundred fossil forms already described, with many more to follow.

By the time this leaflet is published, the mandible will be installed in its case and mounted in such a way as to separate readily at the natural breaks whenever necessary to dismantle it for further study. When finally set up, it can be properly photographed, correctly measured, and fully described, if possible, in the succeeding bulletin.

At this writing no reports on any of the Amebelodontinae have reached this office and no citations can be made.

AMEBELODONT PUBLICATIONS

Barbour, Erwin H.

Preliminary notice of a new Proboscidean, Amebelodon fricki gen. et. sp. nov. Bulletin 13, Volume 1, June, 1927, the Nebraska State Museum.

The mandibular tusks of Amebelodon fricki. Bulletin 14, Volume 1, December, 1929, the Nebraska State Museum. The present bulletin.

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317B